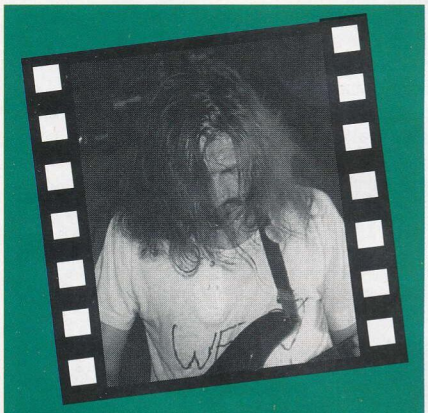
PC MAC

THE PROFESSIONALS

Retro mastering

Snap, crackle and pop

It's true that digital recordings can sometimes sound just too... 'digital'. Let's look at some methods you can use to give your tracks a bit more bite



ROB BRIDGETT

Rob previously worked at Climax Studios and was responsible for the sound on games including *Sudeki*, *Warhammer Online* and *Serious Sam*. He now resides in Vancouver, Canada, where he is working on a number of interactive projects. Rob attained his Bachelor's degree in Film and Television at the University of Derby in the UK and later was one of the first to complete the MA in Sound Design at the University of Bournemouth.

MUSIC AND SOUND are typically defined by the imperfections of a particular medium, as well as the periods, places and trends that we associate with them. If we want to bring the flavour of the 60s or 70s to our music, we can look at using samples, breaks or loops taken from recordings of the era. This is not always practical, due to copyright infringement, but we can begin to replicate the instrumentation and orchestration of the period we wish to emulate, even if it's not always enough to convey the real 'feel' we're looking for.

Often, what defines 'period sound' and music more than any other factor is the medium it's recorded or delivered on. If we think of what defines old TV shows from the 70s, it's usually the woolly picture and sound quality that results from the now-ageing film stock. Similarly, the early 80s move into videotape brought about even more ropey sound and picture. Tape, in purely sonic terms, is a very mechanical medium and often imbued warping effects onto the music toward the ends of each side.

Going back even further, to the 60s, the medium through which music was experienced was typically a low-cost radio, heavy on mid-range frequencies and bereft of low and high frequencies. In terms of record players, generally there was very little affordable high-end equipment out there. Not only that, but the medium of vinyl itself brought its own unique 'deterioration' sounds – clicks, jumps and the now ubiquitous deliberately-placed dust crackles. Who knows, the flaws in today's digital encoding may well be one of the things that future generations will attempt to replicate in order to give a track the 'feel' of the first digital era (you know, all those unwanted compression artefacts on streamed music). These could well be the things that we will be putting back into our music 20 years from now – so make sure you hang on to those old codecs!

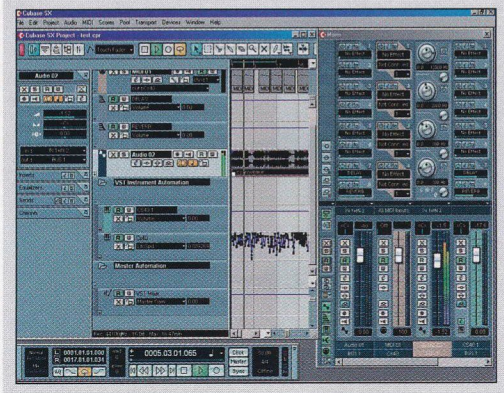
The 'problem' with today's digital soft synths and digital effects is that they can sound too polished, too 'shiny'; that hard digital edge is almost *too* pure. In the quest for authentically aged samples, computer musicians are increasingly finding themselves needing to 'age' or mature the sounds they've created from clean digital sources. This can be a matter of either adding in dust crackle tracks to give the finished piece an authentic 'played from vinyl' feel, or it could be EQ applied to various sections of the music (drums in particular) to give them the baked-in flavour of a period sample.

There are various plug-ins available that are able to replicate the vinyl effect and even dirty up the EQ and compression on your audio tracks. However, it is useful to be able to put your samples manually through the right processes in order to get a more authentic effect.

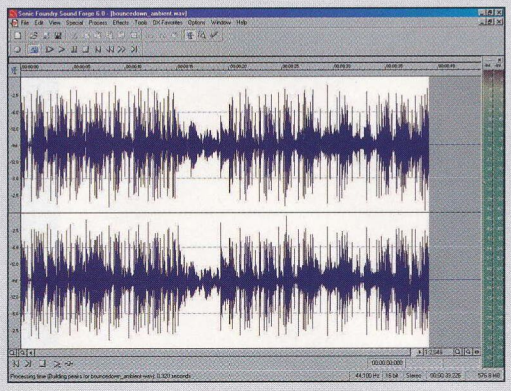
Among the greatest recent exponents of ageing source material are Boards of Canada. They're well known for the amount of time and detail they put into processing and re-processing their source sounds, playing them back through old tape equipment, filtering and subtly pitch-shifting them to give the feel of tape warping and other 'mechanical' effects. Of course, Boards of Canada also mix in many found fragments that really are from their selected periods, and it's to their credit that generally their own sounds cannot be distinguished from the sampled material they're mixed with.

In the following two tutorials, I'll walk you through the ageing process. In the first, I'll examine some techniques you can use to degrade a master track and make it sound genuinely arcane. In the second, we revisit some of these same techniques, apply them to a synth sample, and then use it to create a sampled instrument that Boards of Canada themselves could find a use for. These tutorials are only offered as guides, and the essential thing here is an awareness of the medium you're attempting to emulate. Happy travelling.

Retro mastering

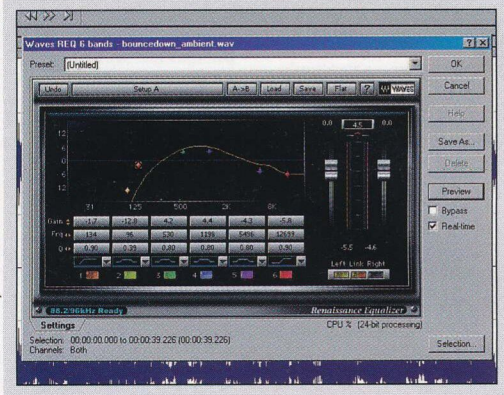


1 Bounce your final mix down to a stereo interleaved 16-bit/44.1kHz .wav or .aif file. This is the source material that we will be working with.

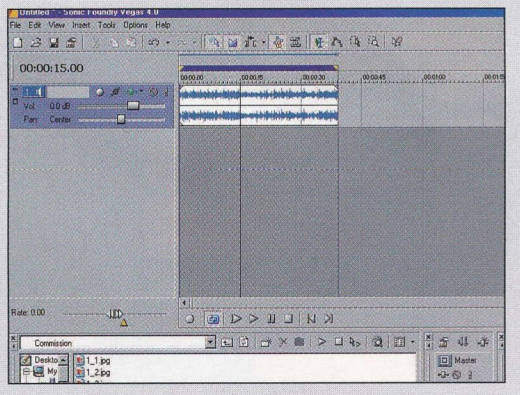


2 Open up the .wav file in an audio editor that will allow you to apply effects plug-ins, such as WaveLab, Sound Forge, Cool Edit or Peak. The first thing we're going to do is apply a vocal compressor to the file to squash down the peaks and bring up the troughs…

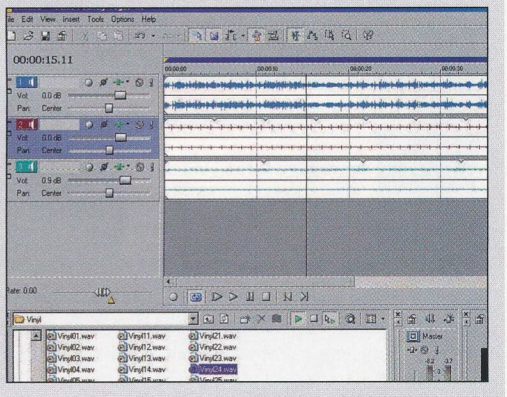
3 Good mastering and compression is a whole tutorial in itself and requires some understanding of the target playback medium. Generally, a light vocal compressor will give a subtle compression and a more 'mastered' feel to the track. Here, I'm using a Waves C4 compressor on the 'Voiceover' preset.



4 Now for some EQ. This will depend on the period you're trying to emulate and how subtle or harsh you want to the finished sound to be. Try out lots of different EQ settings, choose some favourites and save them as presets. For old-style playback replication EQ, bring up the mids and dip down the low and high ends.

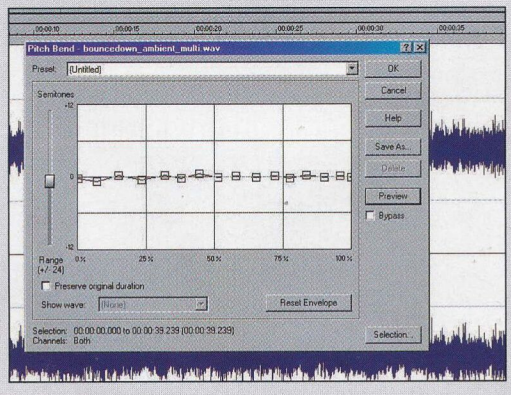


5 Open up file in your sequencer. At this point, we want to merge the sound with some other sounds to degrade it further. We also want to add artefacts, such as the types you'd hear from particular playback devices.

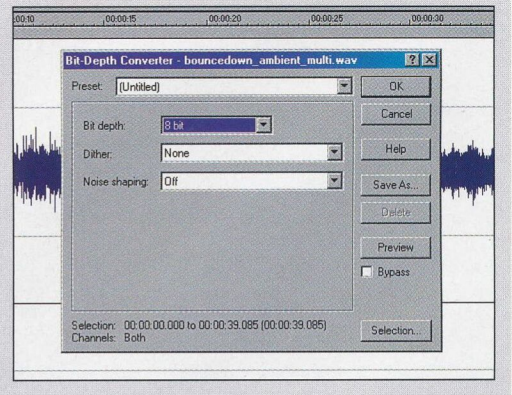


6 Add dust crackle, tape hiss and any other extraneous noises by simply layering them in underneath the track. Some mixing time will be required, and again, this is about how subtle or over the top you want the final effect to be. The next step is to export/recompress your track. Do it now…

7 Recompression will bring the tape hiss or dust crackle more to the surface, so be aware of this when you're mixing in the previous stage. Use this to great effect on drum lines, or parts that have a lot of silent space between them. The recompression stage will also fuse the added crackle or hiss into the music.



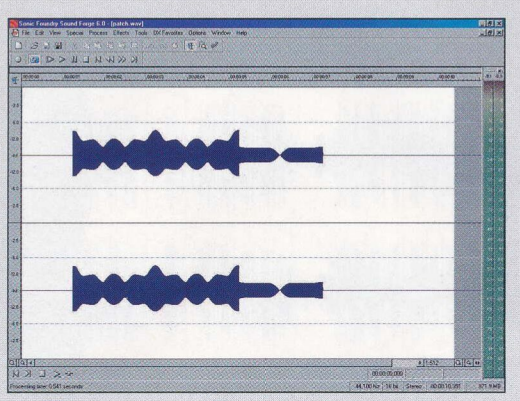
8 Add slight warp using either vibrato or pitchshifting. The further addition of some subtle pitch wavering serves to emulate the flaws in the playback medium of tape, be it eight-track reels or your old home tape deck. Generally, the more subtle you are with this technique, the more authentic it will sound.



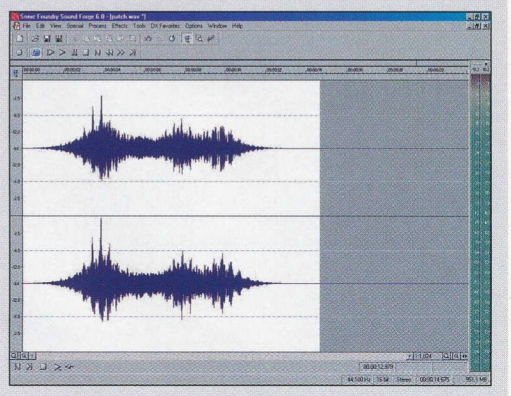
9 Emulate the sound coming over the airwaves by dropping down to 8-bit resolution. This will recreate the effects of medium or short wave radio broadcasts. Again, you may want to add in a pre-recorded track of radio noise or channel drifting at the multitrack stage (steps 5 and 6) to reproduce that authentic 'on air' feel.

Retro sample patch creation

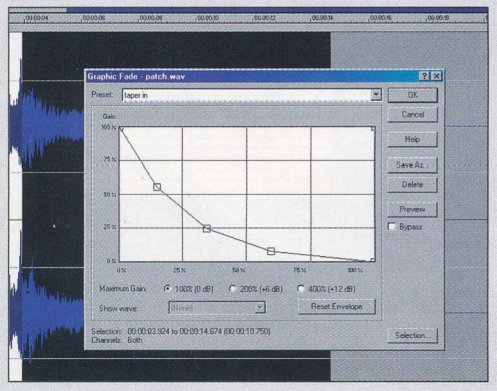
1 First, export a basic synth sound – preferably one note of a rich, multi-octave pad – as a 16-bit/44.1kHz .wav file. In this case, I've used something tasty from Cubase SX's CS40 synth. The more interesting the sound at this stage, the more character we can bring out of it through the processes to follow.



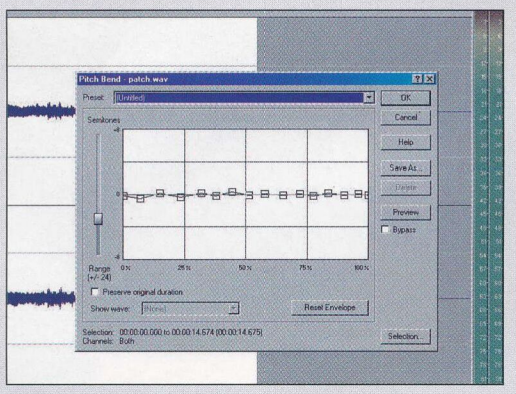
2 Open the .wav up in your chosen audio editor. I'm using Sonic Foundry's Sound Forge.



3 Our sound needs to be reverberated and delayed, then reversed, reverberated and delayed again, and finally, reversed once more. This has the effect of blurring the sound in both directions, which is particularly useful in this case, as I'm attempting to create a rather ambient pad sound.

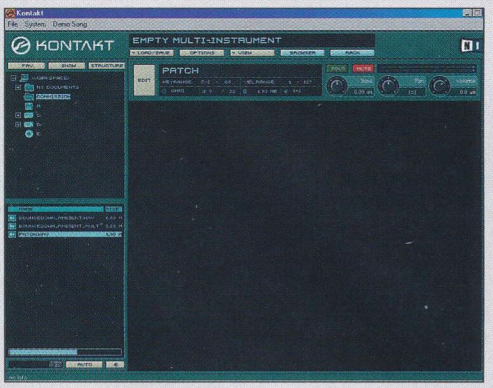


4 The next stage is to envelope this sound effect with a quick fade-in and a long decay envelope. Again, this is down to you and the final sound you're after. If you require more attack or decay, envelope accordingly.

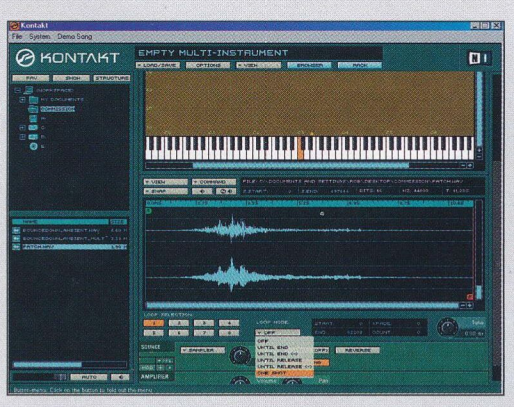


5 Next, we'll add a subtle pitch warping to the pad. Generally, the more subtle this is, the more convincing and authentic it will sound.

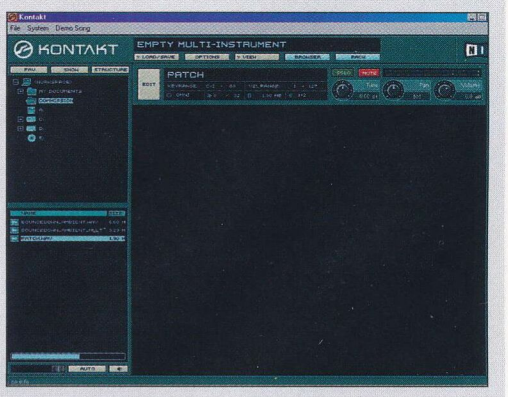
6 Now it's EQ time. Equalise any unwanted bass frequencies out of the file and bring up the mids if required. Generally, the removal of any dynamics from the sound will have the effect of ageing or suggesting degeneration through some kind of inadequate playback device.



7 Save the file and import it into your chosen sampler. In this case, I'm using Native Instruments' Kontakt.



8 Set the sampler up to play your file as a triggered sound, mapped across the entire keyboard range.



9 After saving as a Kontakt instrument (or whatever format your sampler works with), your instrument is fully functional. You can embed this into your track as an authentic 'old' synth sample, whether the track as a whole is retro, contemporary or futuristic. **cm**